

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1 and 5-17 were presently active in this case. The present Amendment amends Claim 12.

In the outstanding Office Action, Claims 1 and 5-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over O'Connor (U.S. Patent No. 4,800,113) in view of Kent (European Patent No. EP 0,630,735A2) and Nemoto et al. (Japanese Patent No. JP 04-201412A, herein referred as "Nemoto") further taken with either one of Schermutzki (U.S. Patent No. 4,743,187) or Baumann (UK patent No. UK 2,040,801A) and optionally further taken with Francis, Jr. (U.S. Patent No. 2,543,101, herein referred as "Francis").

Claims 15-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the references as set forth in paragraph 2 of the outstanding Office Action, further taken with Dittmar et al. (Canadian Patent 2,010,285, herein referred as "Dittmar") and the admitted prior art.

The present amendment amends Claim 12 to correct minor formalities.

In response to the rejection of Claims 1 and 5-14 under 35 U.S.C. § 103(a), Applicants respectfully request reconsideration of this rejection and traverse the rejection as discussed next.

Briefly recapitulating, Applicants' invention relates to a process for continuously manufacturing a rigid void-free composite product *by continuously depositing onto a moving conveyor two layers*, one of two layers *including the plurality of continuous threads*, the other one of the two layers *including the strip of fabric*. The claimed invention thus leads to improved rigid void-free composite products.¹

¹ See Applicants' specification at page 1, lines 4-8 and in the Claims.

Turning now to the applied prior art, O'Connor discloses a process for preparing fiber reinforced thermoplastic articles wherein thermoplastic fibers and reinforcement fibers can be intermingled to produce a composite yarn, which is used to weave a fabric. O'Connor, however, fails to teach or suggest Applicants' claimed *continuously depositing of two layers onto a moving conveyor*, one layer *including the plurality of continuous threads*, the other one *including the strip of fabric*. In particular, the O'Connor patent not only fails to teach or suggest the claimed two layers deposited continuously onto a moving conveyor, but also fails to teach or suggest that one layer includes the plurality of continuous threads, the other layer includes the strip of fabric. The outstanding Office Action acknowledges that O'Connor fails to teach the claimed manner in which the layers are disposed upon a conveyor.²

The outstanding Office Action asserts that one of ordinary skill in the art would have been motivated to practice the invention of O'Connor in a continuous manner. Applicants respectfully disagree. O'Connor teaches that the fabric prepared from hybrid yarns is laminated by placing 2 to 10 plies of fabric, cut to a size of about 9" to 10" in a metal mold cavity³ and further teaches that before melting a hybrid yarn can be prepared, woven into a fabric or chopped and layed up as a batt of non-woven fibers.⁴ A fabric prepared from hybrid yarns cut to a size of about 9" to 10" or a hybrid yarn chopped and layed up as a batt is **not** the process of depositing *two layers continuously onto a moving conveyor*, one layer *including the plurality of continuous threads*, the other one *including the strip of fabric*, as claimed by Applicants. Providing two layers continuously onto a moving conveyor, one layer including the plurality of continuous threads, the other one including the strip of fabric, requires an apparatus configured to feed such layers to the process of manufacturing a rigid void-free composite product, and such an apparatus would be different from the apparatus

² See outstanding Office Action on page 4, lines 17-21.

³ See O'Connor at page 5, lines 11-16.

⁴ See O'Connor at page 1, lines 50-57.

required for the process disclosed by O'Connor. Therefore to achieve continuous process for preparing fiber reinforced thermoplastics as disclosed by Applicants, the process and the apparatus of O'Connor must be substantially modified. Such a modification for continuous composite product manufacturing would additionally require a higher degree of automatisation of the process. Applicants therefore traverse that it would have been obvious to modify the O'Connor patent to practice the invention in a continuous matter.

The outstanding Office Action states that “one of ordinary skill in the art would have been motivated to practice the invention in a continuous manner to continuously produce the composite material wherein the application of heat and cooling under pressure would have been understood to have taken place as a continuous operation.”⁵ There is no support for such an assertion. Where does the prior art suggest that one of ordinary skill in the art would have been motivated to practice the O'Connor process in a continuous manner? While the required evidence of motivation to combine need not come from the applied references themselves, the evidence must come from *somewhere* within the record.⁶ In this case, the record fails to support the proposed modification of the O'Connor system.

The outstanding Office Action further states that “In fact, one skilled in the art would have expected to operation to have been tested in a batch operation initially and that the use of a continuous operation in O'Connor would have been understood to have been useful where on skilled in the art at the time the invention was made desired to continuously manufacture the composite material.” What is the support of such an assertion? Where does the prior art teach this “fact?” The fact that O'Connor is silent regarding a continuous process does not render obvious operating the O'Connor process in a continuous matter.

⁵ See outstanding Office Action on page 4, line 21 to page 5, line 3.

⁶ In re Lee, 277 F.3d 1338, 1343-4, 61 USPQ2d 1430 (Fed. Cir. 2002) (“The factual inquiry whether to combine references ... must be based on objective evidence of record. ... [The] factual question of motivation ... cannot be resolved on subjective belief and unknown authority. ... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency’s conclusion”).

The other cited references (Kent, Nemoto, Schermutzki and Baumann), individually or in combination with O'Connor, do not teach or suggest the features of manufacturing a rigid void-free composite product *by continuously depositing onto a moving conveyor two layers*, one of two layers *including the plurality of continuous threads*, the other one of the two layers *including the strip of fabric* of Applicants' Claim 1.

Newly cited reference Dittmar discloses a continuous process for producing fiber composites,⁷ however Dittmar expressively states that mechanically unconnected fiber bundles are introduced to a double belt press⁸ and furthermore states that the reinforcing fibers are introduced in the form of parallel fiber bundles, are not mechanically connected and that they are *not in the form of woven or knitted fabrics*.⁹ Therefore Dittmar teaches away from Applicants' claimed invention, where a strip of fabric is continuously deposited onto a moving conveyor.

Accordingly, even if the combination of O'Connor with the cited reference Dittmar is assumed to be proper, the combination fails to teach every element of the invention recited in Claims 1 and 5-14. Therefore the prior art fails to teach or suggest every feature recited in Applicants' claims, so that Claims 1 and 5-14 are patentably distinct over the prior art.

Furthermore, Applicants respectfully traverse the obviousness rejection based on the combination of the O'Connor and Francis patents because there is insufficient evidence for a motivation to combine Francis' method of making felt-like fibrous bats with O'Connor's process for preparing fiber reinforced thermoplastics.

O'Connor prepares fiber-reinforced thermoplastic articles by subjecting the composite fabric to elevated temperature (300°C) and pressure (200psi) in order to allow the escape of any air entrapped in the composite fabric or composite. O'Connor, however, does not

⁷ See Dittmar at page 2, lines 11-18.

⁸ See Dittmar at page 2, lines 19-26.

⁹ See Dittmar at page 3, lines 30-36.

suggest that melting the thermoplastic material under pressure for intimate contact between the molten thermoplastic material and the fiber reinforcement material would work with a method of making felt like fibrous bats. Francis does not state that the fibers in the bat or web being bonded together due to activation of the potentially adhesive fibers need a "melted thermoplastic material to come into intimate contact with the reinforcement fibers."¹⁰

In addition, Francis is not concerned by the producing of a fiber-reinforced thermoplastic article. Instead, Francis is concerned with in providing felt-like fibrous bats¹¹ and that a composite product is formed from at least felt like bat or web, so as to leave at least one exposed surface exhibiting felt-like characteristics.¹² Francis states that its structure already achieves the goal of providing felt-like products which combine in a single structure the properties of thickness, low density and high permeability.¹³ The Francis system does not suggest that further improvement is desired, nor that another feature should be added to further improve the felt like layer securely and permanently anchored to a textile layer. In particular, the Francis method does not suggest to add a process of melting thermoplastic material to provide a intimate contact of the thermoplastic material with the reinforcement, such as those disclosed in O'Connor.

The O'Connor and Francis patents, therefore, do not provide the motivation to perform the proposed modification of the O'Connor process. An attempt to bring in the isolated teaching of Francis' method of making a felt-like fibrous bat by anchoring a felt-like layer to a textile layer into the O'Connor process amounts to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.¹⁴

¹⁰ See O'Connor at column 4, lines 27-32.

¹¹ See Francis at column 1, lines 39-43.

¹² See Francis at column 2, lines 15-26.

¹³ See Francis at column 1, lines 1-7.

¹⁴ See In re Ehrreich 590 F2d 902, 200 USPQ 504 (CCPA, 1979) (stating that patentability must be addressed "in terms of what would have been obvious to one of ordinary skill in the art at the time the invention was made

In response to the rejection of Claims 15-17 under 35 U.S.C. § 103(b), Applicants traverse the rejection of these claims based on the same reasons presented in the Response filed on August 20, 2004. Additionally, Claims 15-17 depend upon Claim 1 and therefore the cited prior art does not teach or suggest all the elements of Claim 1. Applicants therefore request reconsideration of Claims 15-17.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1 and 5-17 is earnestly solicited.

The present amendment is submitted in accordance with the provisions of 37 C.F.R. § 1.116, which after Final Rejection permits entry of amendments. In addition, the present amendment is not believed to raise new issues because the changes to Claim 12 are minor and none of the other claims have been amended. It is therefore respectfully requested that 37 C.F.R. § 1.116 be liberally construed, and that the present amendment be entered.

in view of the sum of all the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art," and that one "must consider the entirety of the disclosure made by the references, and avoid combining them indiscriminately.")

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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